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Photofuel - Biocatalytic solar fuels for sustainable mobility in Europe

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Final report on and biocatalytical production of fuel compounds at pilot level



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Publishable Summary

Synechocystis sp. PCC6803 strain capable of assimilate phosphite as single source of phosphorous was cultivated at pilot scale in Unilayer horizontal tubular photobioreactor (UHT-PBR) using continuous mode of operation and a cultivation medium containing only phosphite as single source of phosphorous. This experiment was carried out during the winter and the temperature variations were controlled in the PBR with the objective of improving butanol production.

Comparing this experiment with data from previous phosphite experiment, butanol productivity was not improved, and maximum concentration measured in culture was approximately half of the value previously obtained. Contaminations were able to proliferate in culture medium containing phosphite, probably due to the presence of residual concentrations of phosphate and/or to the capacity of contaminants to oxidize this compound.

A comparison between the use of phosphate and phosphite as single source of phosphorous showed that the main advantage of using phosphite-only medium was the improvement in the length of butanol accumulation after the first observation of contaminations in the culture.

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